


Development of Problem Statement

Transportation Planning Branch		Approved: June 3, 2008 Revised: November 29, 2011 Version 7
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Purpose

The purpose of this procedure is to document how to develop the Problem Statement (PS) for an identified deficiency in an area's transportation system using information from the Comprehensive Transportation Plan (CTP) process. The PS is typically used by the North Carolina Department of Transportation's (NCDOT) Project Development and Environmental Analysis Branch (PDEA) to develop Purpose and Need statements for projects during the project development stage. The Purpose and Need statement is presented for concurrence in accordance with the Merger process for Merger projects and contains more detailed information pertaining to specific traffic data and community issues than the PS.

PS's will be developed for recommended CTP improvements in new CTP reports. The guidance linked to this procedure outlines options for various levels of PS, ranging from the minimum standards for documentation to a Full PS. The decision about which level of PS to develop for various proposed projects in a CTP is based on available resources and the criteria provided herein based on project scope and priority.

Additionally, a PS may be requested for a project under study, which is typically a request from PDEA. This PS request may be for a specific project in areas where the CTP documentation has not been updated to include formal a PS, or where more detail is needed (in cases where a Full PS was not developed). Transportation Planning Branch (TPB) provides a PS upon request for projects that are within an area for which it has provided transportation planning assistance or for which it has developed a Comprehensive Transportation Plan (or Thoroughfare Plan) in the past. PS's only include information that is typically generated during the CTP process. PS's are intended to replace what was formerly known as 'planning-level purpose and need' statements.

Background

NCDOT's TPB is responsible for identifying long-range transportation needs through the CTP process. The CTP process involves identifying deficiencies in the transportation system by using modeling and forecasting techniques that take into account land development patterns,

employment and population projections, and community values. This information is used to analyze the transportation needs of the area and develop a CTP that recommends transportation improvements to alleviate identified deficiencies. The development of these recommendations involves consideration of the physical, natural, social and economic environment. The planning process includes extensive input from the local community. In Metropolitan Planning Organization (MPO) areas, the CTP is mutually adopted by the MPO and NCDOT. In Non-MPO areas, the CTP is mutually adopted by the local governing body and NCDOT, as well as being endorsed by the Rural Planning Organization (RPO).

Responsibility

It is the responsibility of the:

Transportation Planning Branch Project Engineer (TPB PE) – To develop PS's as part of a CTP and to provide PS's for specific projects upon request for project development.

Transportation Planning Branch Staff Engineer (to be done by TPB Regional Planning Group Supervisor when position is vacant) – To monitor and track requests for PS for project development and to enter the PS(s) developed upon request from project development into Project Store (See [Project Store – Enter Data](#) procedure).

Policy, Regulatory, and Legal Requirements

[‘Purpose and Need Guidance for FHWA-funded Projects in North Carolina’](#) Federal Highway Administration (FHWA) NC Division, Version 2, February 2009

Scheduling and Time Constraints

Coordination between TPB and PDEA within NCDOT is important to allow the smooth transition of a project from transportation systems planning to project planning.

Development of a PS upon request for project development must meet agreed upon dates.

Procedures

Process for Developing Problem Statements as Part of CTP Development

Procedure Input – Information from CTP Process, Project Information File

Procedure Output – PS's as part of the CTP Document

Complete the following steps to develop PS's as part of a CTP.

Step	Action
1	Determine which level of PS will be developed for various proposed projects in the CTP. This decision should be made by the TPB PE in consultation with the local governing body, the MPO, and/or the RPO, as appropriate. The level of documentation will vary based on the number of proposed projects and available resources. Criteria for determining which level of PS to develop for various proposed projects is given in the ‘Problem Statement Guidance’ provided below.
2	Develop the PS(s) in accordance with the ‘Problem Statement Guidance’ . The information from the current CTP under development will be included in the PS. A PS will only include information that is typically generated during the CTP process. The level of detail provided and format may vary based on applicability and available

	<p>resources (see also step 1 above). If a given proposed project crosses the planning area boundary, ensure that the PS being develop for the given CTP refers to and is consistent with the other relevant CTPs, as appropriate.</p> <p>The development of PS's should begin as part of the deficiency analysis. Document the identified problems or needs without regard to a potential solution. During alternatives analysis add additional information to the PS as you identify potential solutions to address your problems. The second section "CTP Project Proposal" should be drafted with the development of the DRAFT CTP maps once you have identified a selected long range planning alternative (or CTP Alternative).</p> <p>At a minimum, a brief statement of the problem and proposed project description will be documented for all proposed projects (for all modes of the CTP), according to the Minimum PS standards in the 'Problem Statement Guidance'. Certain proposed projects will be selected for which a Full PS will be developed. It may also be determined that a PS will be developed that is more detailed than the Minimum PS but less detailed than the Full PS. In this case both sections of the guidance should be used to ensure that all the elements of the Minimum PS are included and then information from the Full PS is added as resources allow.</p> <p>For MPO CTPs, the responsibility for documenting the PS may be shared by the TPB PE and the MPO staff, based on roles agreed upon in the CTP Step, 'Develop CTP Vision' (future link). For CTPs in RPO areas, the TPB PE typically assumes responsibility for development of the PS, in consultation with the RPO and municipal/county staff.</p>
3	<p>The TPB PE will include PS's as part of the CTP documentation. The draft PS's will be sent for internal review with the Draft CTP Maps (see TPB Procedure 'CTP Maps- Internal Review'). Additionally, the TPB PE will send the draft Full Problem Statements and CTP Maps (via e-mail in PDF format) to the appropriate PDEA Unit Head requesting review of the Full Problem Statements only(see step 7 of TPB Procedure CTP Maps- Internal Review).</p> <p>The PS developed as part of a CTP study should be used as supporting information in the project prioritization process. MPOs, RPOs, and NCDOT should use the PS information as they rank needs for each area. When entering projects into the Prioritization Tool (managed by SPOT), the PS should be attached as supporting documentation.</p> <p>The PS developed as part of a CTP study should be shared by the TPB PE with the PDEA PE at the project initiation meeting (refer to the TPB procedure 'Scoping Assistance- PDEA'). At the time of the project initiation meeting, the TPB PE and the PDEA PE will review any existing problem statement, checking both the CTP report and the project prioritization system. It can be discussed whether the information is sufficient (if less than a Full PS has been developed) or whether PDEA will request a PS for the project (see procedures below).</p>

Process for Developing Problem Statements Upon Request for Project Development

Procedure Input – CTP Document, Project Information File

Procedure Output – PS and Memo to the requesting entity

Complete the following steps to fulfill a PS request for project development.

Step	Action
1	The TPB Staff Engineer receives a request for the development of a PS. The request for TPB to provide the PS for a project in project development is typically initiated by the PDEA Project Engineer (PDEA PE), but may also come from others. The request should be in the form of a memo to the TPB Staff Engineer. The memo should include the project scope, location map, any other relevant information, and a requested completion date (typically 12 weeks from the date of the request).
2	The TPB Staff Engineer logs the request and distributes it to the appropriate TPB Planning Group Supervisor. The Group Supervisor will then assign it to the appropriate TPB PE within their Group.
3	After receiving the PS request, the TPB PE will send the requestor a memo (copying the TPB Staff Engineer) acknowledging receipt of the request and confirming whether the suggested completion date can be met. (Typically a PS request will take 12 weeks to fulfill.)
4	The TPB PE may schedule a meeting with the requestor to review the request and identify appropriate issues to be included in the PS documentation. Any existing documentation for the problem statement should be reviewed as well (from both the CTP report and the project prioritization system). During the development of the PS, the TPB PE should coordinate with the requestor as appropriate.
5	<p>The TPB PE and/ or MPO staff develops the PS in accordance with the ‘Problem Statement Guidance’ provided below.</p> <p>TPB’s commitment is to provide PS documentation for all projects that are within areas that have received transportation planning assistance through the TPB. For those requests that are in areas without an existing CTP (or Thoroughfare Plan), the Group Supervisor or the appropriate TPB PE will provide a reply that includes any available information.</p> <p>The product TPB will provide the requestor does not necessarily contain all the potential information listed for a Full PS (see the ‘Problem Statement Guidance’ below), but will contain as much information as is readily available. The level of detail provided and format may vary based on available information and discussions with the requestor.</p> <p>The current CTP (or Thoroughfare Plan) should be reviewed for information to be included in the PS, if available. The TPB PE will then develop the PS if none exists or add information as needed if less than a Full PS exists. A PS will only include information that is typically generated during the CTP process and data current as of the CTP study date. However, the TPB PE must contact the MPO, RPO and municipal/ county staff in the vicinity of the project to gather local input for the PS.</p> <p>Note that more specific information and updated data is expected to be obtained by the PDEA PE when using the PS to generate the Purpose and Need. Part of this request for this information may come to TPB. With Project Streamlining, the request for a traffic forecast will likely come after the Purpose and Need has been developed and approved. However, there may also be a request for a traffic estimate (mainline traffic projections from the CTP or LRTP) around the time of the PS request.</p>
6	The TPB PE provides the draft PS documentation to the TPB Regional Planning Group Supervisor and TPB Unit Head for review. Once comments are addressed, and it is approved by the TPB Regional Planning Group Supervisor, the TPB PE will

	distribute the PS to the requestor, the TPB Staff Engineer (electronically), the TPB PE's Supervisor, and the CTP main file.
7	The TPB Staff Engineer enters the PS into Project Store (see Project Store – Enter Data procedure).
8	The TPB Staff Engineer logs the request as complete and maintains a copy of the PS.

Problem Statement Guidance

The '[Problem Statement Guidance](#)' provides the type of information that may be included in a PS. It is applicable to both PS's developed as part of a CTP study and those requested for specific projects for project development.

The guidance includes criteria for determining which level of PS should be developed for various proposed projects as part of a CTP Study. There are sections that describe how to develop a Full PS, Minimum PS, or PS that References a Purpose and Need Underway or Completed. If it is determined that a PS will be developed that is more detailed than the Minimum PS but less detailed than the Full PS, both sections of guidance should be used to ensure that all the elements of the Minimum PS are included and then additional information from the Full PS as resources allow.

The guidance for a Full PS is the intended starting point when developing a PS upon request for project development; however, the level of detail provided and format may vary based on available information and discussions with the requestor, which is typically the PDEA PE.

The examples of PS's provided under '[Resources and Tools](#)' may also be helpful in developing a PS.

Further information is provided in the '[Purpose and Need Guidance for FHWA-funded Projects in North Carolina](#)' FHWA NC Division, Version 2, February 2009. These guidelines describe the Purpose and Need that is ultimately developed for project development using the PS. However, it contains information relevant to developing PS's, including examples of types of data based on the primary purpose identified (see Appendix B).

Creating Maps for Full Problem Statements

A map is required for full PS's, but maps are optional for others. All full PS's should include a heading that contains the facility name, Local ID number, and improvement description. The map(s) are then located under this heading. A north arrow and scale must be shown on each map. The project location map should only show the given project and the CTP base map; other CTP project proposals are not to be included unless needed for clarification or reference. A label with the Local ID should be included on the project location map, as shown in the Full Problem Statement Template. Adequate road names should be labeled so that the PS information can be followed. For instance, label intersecting roads and other features that are referenced in the PS when possible.

For a full PS, a project location map is required and other maps can be added at the project engineer's discretion. For example, a map showing the project within the entire planning area could be included. An aerial map and/ or photographs may also be included if it is determined to be informative and desirable. The first half page, up to one whole page, of the PS may be used for maps.

Step	Action
1	Create a polygon shapefile using ArcCatalog.
2	In Arcmap, with all required shapefiles, edit the polygon shapefile to create a new feature which is a rectangle around the area needed.
3	Using the polygon created in step 2, clip and export all required shapefiles. Use ArcMap's Clip tool from ArcToolBox to clip and export shapefiles, one at one time.
4	With the new shapefiles and the polygon rectangle around it, create the required image in ArcMap by adding symbology, shields, labels, text boxes, text, etc. Note: Always add labels, shields and text in Dataview.
5	In the Dataview, using text boxes and text tools create project ID labels on the map.
6	Once complete, export map from Dataview (NOT Layout View) by using File –Export map and save type as EMF (*.emf).
7	In Word document, perform Insert – Picture – From File – EMF (*.emf)
8	Using Edit toolbar, crop the picture.
9	In ArcMap, in Layout view, insert North Arrow and Scale. Copy each and paste in Word, near the previous picture. Change the format of each to “In front of text”. Move them and place them in the bottom right corner of the project map picture.

Warnings and Precautions

None

Resources and Tools

[Problem Statement Guidance](#)

Templates/ Examples:

[Full Problem Statement Template](#)

[Minimum Problem Statement Example](#)

[Problem Statement that References a Purpose and Need Underway or Completed Example](#)

[‘Purpose and Need Guidance for FHWA-funded Projects in North Carolina’](#) FHWA NC Division, Version 2, February 2009

[Problem Statement Development Tips](#)

Customer [Frequently Asked Questions](#)

[Project Store Procedure](#)

Contacts

- For suggestions to change this procedure contact: Elena Talanker, (919) 707-0911
- For questions about performing this procedure contact: Alena Cook, PE, (919) 707-0910

Glossary

For a complete listing of terms, definitions and acronyms, go to the [Master Glossary](#).

- Problem Statement
- Purpose and Need
- Transportation Planning

User Access

Restricted NCDOT, FHWA, MPO, RPO, Consultants, etc.

Flowchart

None

Record of Revision

Version	Section Affected	Description	Effective Date
1.1	Title	Removed 'CTP' from the title of the procedure in order to clarify the intent of the procedure.	10/28/2008
2	Entire Procedure	Major overhaul to reflect new guidance	12/30/2009
2.1	Resources & Tools	Updated Problem Statement Guidance document. Added a FAQ document.	03/15/2010
3	Procedures	Added Step 7 to enter PS into Project Store.	03/31/2010
4	Entire Procedure	Various edits to procedure. Updated Problem Statement Guidance document and FAQ document. Added additional examples to Resources and Tools.	07/21/2010
5	Procedure	Changed name to 'Purpose and Need Underway or Completed', (adding 'or Completed'). Minor edits to Guidance and Full Example.	9/24/2010
6	Procedure & Guidance	Procedure- Added reference to project prioritization process. Guidance- Added explanation of the relationship of CTP project proposals to SHC. Full Example- changed formatting of heading, reduced number of maps, and added 'last updated' date in title.	2/10/2011

7	Procedure	<p>Procedure- Added that only 1 map is required for a full PS; others are optional. Specified that the PDEA request for review is by e-mail in PDF format and the PS in the project prioritization system should be reviewed during project initiation. Other minor changes. Guidance- added more information on addressing multi-modal. Full Example- changed to a template. FAQs- added location of analysis methodology and explanation of when/ where safety data may be included.</p>	11/29/11
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